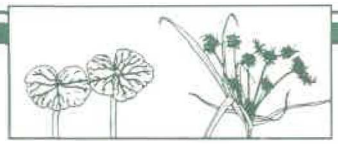


Aquatic Plant Identification and Management Workbook, *Series 4*

The Aquatic Plant Identification and Management Workbook Series is designed to acquaint pond owners in Maryland with naturally-growing aquatic plants and the general means for managing their growth. Aquatic plants play an important role in the natural ecology of ponds: they provide food and shelter for many fish, aquatic animals and other wildlife, and they provide oxygen, which can benefit fish production.

Sometimes, however, growth gets out of hand and the plants become so numerous they interfere with the intended use of the pond, for example, fishing, swimming, boating — they are then called aquatic weeds. When this occurs, control measures often become necessary.

The suggested chemical controls in this workbook series are intended as guidelines and must not replace directions on chemical labels. Separate fact sheets display each of the aquatic plants in this series and are available from the Maryland Sea Grant Extension Program or your local Cooperative Extension Office.

EMERGENT VEGETATION

Spikerush

Reginal M. Harrell and Richard E. Bohn

University of Maryland Cooperative Extension Service, Sea Grant Extension Program

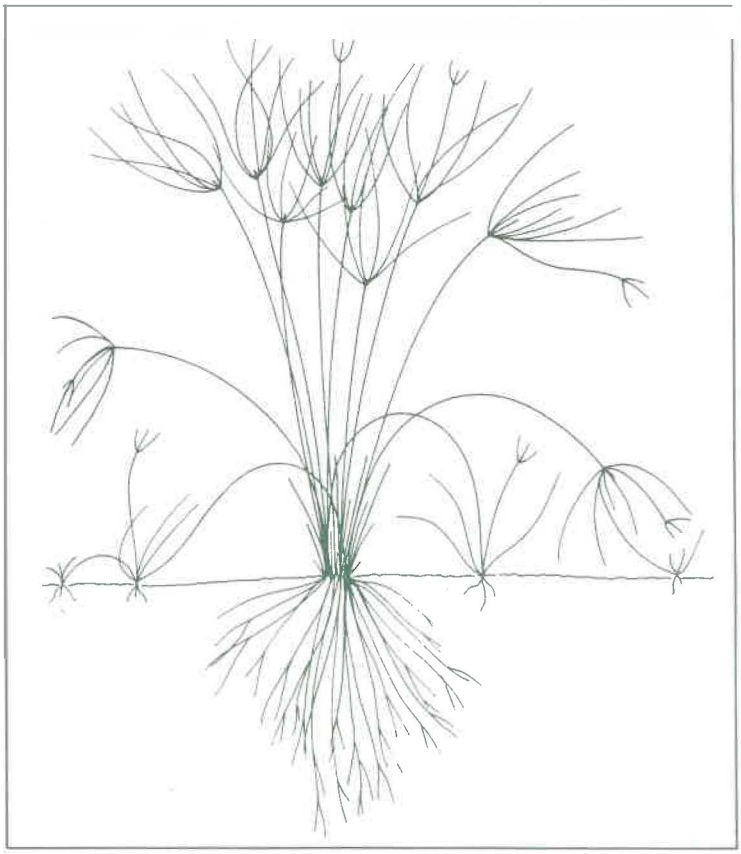
Vascular flowering aquatic plants are seedbearing and are characterized by a system of conductive and supportive tissue. They can be classified into several broad categories of vegetation: floating, submersed, emergent, and terrestrial. This fact sheet focuses on spikerush, an emergent plant.

As a group, emergent plants are usually found rooted in shallow waters and all or part of the plant extends above the water line or hydrated soil. Some plants are not truly aquatic, and may be found in dry fields completely removed from a water source. The plants are usually rooted to the bottom of a pond, have a rigid cell structure, and are not dependent on the water column for support.

SPIKERUSH

(Eleocharis spp.)

There are over 200 species of spikerush found throughout the world with about 25 of them com-



Credit: IFAS, University of Florida, Gainesville

Emergent Vegetation: Spikerush

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mon to the eastern United States. Spikerushes are usually perennials although some annuals are found. Normally they grow in the mud along a pond or drainage canal bank, or in the shallow water regions of a pond or lake margin. Spikerushes are usually considered an emergent plant, but some species may spend their entire life completely submersed under clear shallow waters up to six feet deep.

In general, spikerushes are rapidly growing and considered a pioneer species which quickly occupies disturbed soils such as those that have been recently graded or leveled by heavy machinery. Because of their fast growth, these plants are beneficial in erosion control. They can proliferate in both freshwater and brackish marshes. Found in all sizes and shapes, the green leafless stems grow in height anywhere from a few inches to as tall as six feet, and can be found in clumps, colonies, or mixed with other plants.

The spikerushes are moderately valuable to ducks, with only about 12 of the species making up the most important plants. Common (*E. palustris*), dwarf (*E. parvula*), slender (*E. acicularis*), and square stem spikerush (*E. quadrangulata*) are some of the most valuable spikerushes to waterfowl. The entire plant – stems, seeds, and rhizomes – are eaten by waterfowl, and the dense stands also provide protective habitat for small fish and insects.

IDENTIFICATION

The spikerushes can be annuals or perennials arising from stolons (horizontal runners with nodes from which roots and new plants can develop) or rhizomes (underground horizontal stems that resemble roots but have nodes from which new plants develop). The stems of the plant can be round, three-sided, or four-sided, and can be as thin as a thread or as thick as a pencil. The leaves are modified or reduced to bladeless sheaths. A terminal spikelet is characteristically found at the end of the upright stems. In some species, the spikelet is about the same diameter as the supporting stem, while in others it can be considerably thicker than the stem.

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat spike rush. The table was compiled from information gathered from the aquatic chemical industry. *Inclusion in the table does not imply endorsement by the University of Maryland nor by the authors.* Omission of chemicals is a result of oversight on the authors' part or of new label registration. The table is for comparison purposes only and is not intended to replace the chemical label. Labels are subject to change; therefore, always check the label for treatment sites, rates, and precautions before purchasing or applying any chemical. **Do not use the table for treating aquatic plant problems.**

Spikerush (*Eleocharis* spp.)

Chemical Name	Chemical Type	Application	Restriction	Comments
Sonar SRP	Fluridone	3.2-25 lb/acre depending on pond depth	no irrigation of established tree crops – 7 days new crops and turf – 30 days	do not use in tidal or brackish water or on farmed crayfish
Sonar 5P	Fluridone	Pond Depth < 3 ft 10-15 lb/acre 3-5 ft 15-20 lb/acre > 5 ft 20-30 lb/acre	no irrigation of established tree crops – 7 days new crops and turf – 30 days	do not use in tidal or brackish water or on farmed crayfish
Sonar AS	Fluridone	Pond Depth < 3 ft 0.5-0.75 qt/acre 3-5 ft 0.75-1.0 qt/acre > 5 ft 1.0-1.5 qt/acre	no irrigation of established tree crops – 7 days new crops and turf – 30 days	do not use in tidal or brackish water or on farmed crayfish

The spikelets are single, scaly, lance-shaped or oblong, and contain few to numerous perfect flowers (both male and female parts on the same flower). The flowers are usually arranged in a spiral and overlapping manner. The fruit, known as an achene, is a single, convex or triangularly-shaped seed that is topped by a cap called a tubercle. One seed is produced under each scale. Both the achene and tubercle shapes are important in species identification. Reproduction can be both sexual and vegetative. Flowers are normally found in summer and early fall.

CONTROL

When chemicals are used to control aquatic vegetation, certain precautions must be followed. Always read the label and follow the directions. It is best to spot treat areas where spikerushes are first sighted or wait until spring or summer when the plant is in bloom. Determine the water uses and any use restrictions associated with the chemical control.

Obtain all necessary permits. Make sure you have properly identified the aquatic plant and have chosen the correct chemical control. Mix and apply the chemical according to the label directions. Keep the necessary records – they are required by law. Finally, monitor the water for dissolved oxygen and pH shifts after treatment to determine the effectiveness of the treatment and whether any fish kill occurs. Heavy plant die-off can cause oxygen depletion, while heavy growth can cause pH shifts on a daily cycle.

REFERENCES AND FURTHER READING

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Radford, Albert E., Harry E. Ahles, and C. Ritchie Bell. 1968. Manual of the vascular flora of the Carolinas. The University of North Carolina Press, Chapel Hill.

Traver, David P., John A. Rodgers, Michael J. Mahler, and Robert L. Lazor. 1978. Aquatic and wetland plants of Florida. Special Publication, Florida Department of Natural Resources, Bureau of Aquatic Plant Research and Control. Tallahassee, Florida.

NOTE: Because of the ecological role and sensitivity of aquatic vegetation, as well as Baywide efforts to restore this important resource, the state does not permit the use of chemical control in tidal waters, and greatly restricts their use in nontidal, flowing waters. Acquaint yourself with all regulations governing plant control activities, and obtain all necessary permits. Non-chemical means should be utilized where practicable.

FOR FURTHER INFORMATION

For general information about the Maryland Sea Grant Extension Program, visit the web:

http://www.mdsg.umd.edu/MDSG/Extension/index.html

For technical questions, contact an extension agent or specialist at one of these locations:

Maryland Sea Grant Extension
University of Maryland
Wye Research and Education Center
P.O. Box 169
Queenstown, MD 21658
Telephone: (410) 827-8056

Maryland Sea Grant Extension
University of Maryland
Chesapeake Biological Laboratory
P.O. Box 38
Solomons, MD 20688
Telephone: (410) 326-7356

Maryland Sea Grant Extension
University of Maryland
Cooperative Extension Service
NOAA Chesapeake Bay Office
410 Severn Ave., #107A
Annapolis, MD 21403
Telephone: (410) 267-5674

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FOR ADDITIONAL COPIES

Copies of Maryland Sea Grant Extension workbooks on aquatic plants, including color photographs for use in identifying species, are available on the web at:

http://www.mdsg.umd.edu/MDSG/Extension/Workbooks

Additional copies of printed workbooks are available from the Maryland Sea Grant College Program, 0112 Skinner Hall, University of Maryland, College Park, MD 20742-7640.

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